Physiological Response to Political Advertisement: Examining the Influence of Partisan and Issue Congruence on Attention and Emotion

H. DENIS WU[1]
Boston University, United States

This study investigates voters' physiological response to real political advertisement that is issue-focused and sponsored by three different political entities (2X3 design). Eye-tracking and facial expression analyses were utilized to gauge viewers' cognitive and affective responses. Results show that voters' attention to political advertisement is influenced more by partisan congruence than by issue congruence. Viewers' facially expressed emotions after their exposure to political advertisement are significantly less negative but hardly elated. Participants' self-reported issue involvement and their eye-tracking measure do not necessarily match, neither do their stated discrete emotions and automatically coded facial expressions. Conceptual issues and implications from self-reported and physiological measures are discussed.

Keyword: Physiological response, eye tracking, facial expression, political advertising, emotion, biometric

Political commercials are a staple of elections to generate desirable effects for certain candidates. Despite their prevalence in each election and ample assessments of their effects (e.g., Iyengar & Ansolabehere, 1997), their real impact on voting decisions remains unclear. Voters' attention and emotional responses to political messages are pivotal to discerning campaign effects. Political candidates, party operatives, campaign consultants, and issue advocacy groups are all vitally keen on capturing the attention and eliciting the

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right emotion of the electorate to their favor. There has been an immense body of literature on how political campaigns can elevate candidate recall, image, and electability (Faber & Storey, 1984; Wadsworth et al., 1987). The topical level on which assessment of campaigns is based often range from cognitive awareness, affective effect, to eventually behavior change, which is conventionally described as the hierarchy of effects in advertising research (Ray, 1981). Yet, one of the major methodological commonalities is that research results tend to rely on self-reports of respondents. Researchers usually need to take respondents' words as their truthful answers albeit an array of barriers, such as participants' motivation and communication fluency, may decrease or hinder the fidelity of the measure.

Respondents' physiological responses to political messages can be an alternative for researchers to gauge campaign effects. This route of gathering empirical data may circumvent or curtail several shortcomings of self-reports and provide additional evidence to either verify the traditional self-reported measures or shed new light on the effect and processing of political messages (Hibbing et al., 2014; Petersen et al., 2015). It is likely that physiological responses may present raw evidence without the potential interference stemmed from humans' cognitive processing or intentional camouflage (Ekman, 2003). With this rationale in mind, the researcher employed both routes of measurement to investigate people's responses to political advertisement with the means of conventional survey method and eye-tracking and facial expression detections, which are intended to capture viewers' cognitive and emotional reactions.

Elections are about selecting the most suitable political candidates to solve issues facing society. Political perspective and issue stance are, therefore, the focus of the electoral processes, which drive voters. It is reasonable then to presume voters' existing partisanship and concern about certain issues influence their attention and emotional reaction toward political messages delivered by political candidates. However, only a handful of empirical studies (Coronel & Federmeier, 2016; Wang et al., 2014) investigated viewers' physiological responses toward political messages—and none has yet focused on whether congruent or incongruent campaign content can be effective. A significant part of

campaign resource is often spent on political advertisements that may or may not resonate with target voters. This study is intended to fill the critical void by investigating voters' behavior via their eye movements and facially expressive responses to political commercials aired in the 2016 campaign cycle. This sort of empirical evidence can more comprehensively illustrate the selective exposure phenomenon that has been explored and expanded in recent literature (Kim & Lu, 2020; Westerwick et al., 2017).

Literature Review

Selective Exposure

With access to a multitude of channels, mediums, and platforms for typical Americans, the issue of selective exposure has generated a great amount of scholarly attention in both communication and political fields (Arceneaux et al., 2012; Messing & Westwood, 2014; Stroud, 2010). Media users can actively or passively select content according to their personal tastes, needs, preferences, and political inclination or ideology, easily forming the phenomenon of information "cocoons" for certain pockets of societal members (Sunstein, 2002). In addition to the personalized affordance offered by new technology (Dylko, 2016), the advertising industry has long spurted this trend for its greater marketing effect and targeting precision (Iyer et al., 2005; Turow, 1997). As a result, there has been slight commonality in terms of content consumption and concern over critical issues across varied demographics and life cycles within society (Helsper, 2010; Macias, 2016). However, the scope of most empirical inquiries has resided at the level of demographics – that is, demarcation of media users according to their income, age, race, education, and gender was examined to detect its influence on content exposure.

Political division or partisanship has only been a focus in the past decade as a factor linked to selective exposure (Knobloch-Westerwick, 2012; Schmuck et al., 2020; Stroud, 2017). In most recent studies, it is attributed to the abundant media choices people have (Prior, 2013; Stroud, 2010)—the division of political views has become more pronounced and broader. On the other hand, partisan affiliation can be an effective antecedent for

deciding the message one receives or attends to—in other words, the cause of selective exposure (Messing & Westwood, 2014) or selective attention (Wang et al., 2014). The latter scenario echoes or confirms the audience's existing attitude (Westerwick et al., 2017)—particularly political attitude (Wu & Dahmen, 2010)—and also prevents them from attending to uncomfortable, conflicting information (Sears & Freedman, 1967).

While it is safe to predict that conservative audiences would choose certain channels and liberal counterparts would tune into other channels for news (Arceneaux et al., 2012), it is less clear how given political content (or widely circulated advertisement, in this case) is literally selectively processed by viewers concerned with different issues or voters of varied political affiliations. In other words, we know far more about people's selection preference prior to their content exposure and much less about their—intentional or accidental—exposure, attention, and subsequent cognitive or physiological responses. Television-based, app-algorithmized, and internet-triggered commercials often do not offer viewers the opportunity to choose—or avoid. Therefore, the premise of traditional selective exposure literature (Stroud, 2010)—people have options *prior to* content exposure—is not always applicable in many media consumption environments. Sometimes viewers are forced to be exposed to political commercials—albeit reluctantly and/or accidentally. This kind of *post-hoc* selective exposure situation is common and should be examined too.

Without the aid of familiar channel logos or highly recognizable hosts to signal political inclination of forthcoming content, the audience's instinctive mechanism in sifting congruent content to process may be challenged to some extent. Moreover, it is unclear what kind of cognitive and affective behavior (Petersen et al., 2015) viewers of different backgrounds would demonstrate in the course of content processing. Therefore, it would be theoretically fruitful to explore and ascertain other cues embedded within the content—particularly those commonly existing in the political ad context—to determine if they also exercise viewers' selective exposure mechanism. Two of the most common political cues for participants in democratic society are party affiliation and issue.

Party and Issue Congruence

Political affiliation of individuals is arguably the most powerful factor in determining their political behavior (Campbell et al., 2011), which may govern not only their candidate preferences but also their choices of media (Dylko, 2016; Prior, 2013), exposure to mediated messages, social networks, or even facts (Messing & Westwood, 2014; Schreiber et al., 2013). In a highly partisan political system like the U.S., voters' exposure to political messages hinges immensely on their choices of channels, platforms, and an array of personal reasons. Even though the influence of partisanship has been well documented in the literature of political communication (Arceneaux et al., 2012; Knobloch-Westerwick, 2012; Stroud, 2010; Wu & Guo, 2020), confirming its influence via the physiological route at the individual level is yet to be achieved.

The importance of critical issues surfaced in electoral campaigns has also been underscored in the literature (Forgette & Platt, 1999; Hyun & Moon, 2014) albeit the influence of an issue on voters' decision understandably shifts under different circumstances (Whiteley, 1988). Voters evaluate political candidates based on their stances on the issues they are most concerned about (Whiteley, 1988). However, people's attention or concern level of certain issues can shift significantly across times and their issue assessments can be primed by the media (Dillman Carpentier, 2014). Some issues such as abortion, gun control, or health care (Konisky & Richardson, 2012) can be so critical that steer the electorate one way or another. According to Pew Research Center (2016), the economy and immigration were two issues that registered voters expressed greatest concern during the 2016 election. While the economy tends to be "owned" by Republicans and immigration embraced more by Democrats (Benoit, 2018), they present an opportunity to test the effect of issue congruence among voters.

Attention and Emotion

In each election campaign season where billions of dollars are channeled into television commercials in the hope of affecting the electorate, evaluation of campaign effects has been the center of empirical investigations in the last decades (Garramone et al., 1990; Kaid & Sanders, 1978; Nimmo, 2001). The existing literature of assessments of political campaigns indicates that most common measures of the outcome after selective exposure to any content are voters' attention and emotion. Viewers naturally choose the mediums and platforms to their liking (Valentino et al., 2009), pay far more attention to the content they deem consonant or positive (Karlsson et al., 2009; Sülflow et al., 2019), and get emotionally aroused by the content they process (Lu & Lee, 2019). In the context of political commercials, voters' attention is elevated and enhanced when particularly political interests are met (Ohme & Mothes, 2020); that is to say, in a highly partisan context, either party affiliation or issue perspective conveyed in the commercial, or both, should correspond to counterparts of viewers in order to draw their attention.

Likewise, voters' emotions can be aroused when they are exposed to highly partisan commercials, which may be unavoidable in some districts during heated election seasons. In particular, negative emotions such as fear and anger can be effectively transferred by the audience's constant exposure to attacks and smears in political messages (Coleman & Wu, 2015). The emotional consequence of voters' exposure to political advertisements has been underscored recently in the literature for its potential impact on mobilizing segments of the population (Banks & Bell, 2013) and voting behavior (Krotzek, 2019; Martin, 2004). What is more, political polarization, which has beleaguered many democracies around the world, is primarily stemmed from affects (Iyengar et al., 2012).

While the existing body of literature on partisan selective exposure (Arceneaux et al., 2012; Stroud, 2010) provides ample evidence on the influence of political congruence on attention, the potential impact of exposure to congruent (or of avoidance to incongruent) messages on emotion is less well documented. Steiger et al. (2019) discovered that both conservatives and liberals feel emotionally negative (e.g., angry, disgusted, or contemptuous) toward ideologically dissimilar congresspeople, which sheds light on the

emotional consequence of incongruent content exposure. Huddy et al. (2015) found that strongly partisan people are more emotionally aroused by threats to their party status than weakly partisan people. What is more, the more partisan voters are, the angrier they can be toward oppositional stances (Mason, 2015). Based on these findings, viewers' willingness to attend to congruent political commercials is likely to be associated with positive emotion and avoidance is likely to be linked with negative emotion. That is to say, Republicans would feel positive when viewing Republican-endorsed commercials, to which Democrats would not feel positive. Given the consequence viewers' selective exposure may yield, this study set out to examine the following four hypotheses:

H1: Participants' congruence with political parties will be positively related to their attention to a political commercial.

H2: Participants' congruence with political parties will be positively related to their emotion generated by a political commercial.

H3: Participants' congruence with issues will be positively related to their attention to a political commercial.

H4: Participants' congruence with issues will be positively related to their emotion generated by a political commercial.

Physiological Measures

The conventional method of measuring people's cognitive and affective responses after exposure to stimulation usually relies on their reflection and elaboration. Self-administered surveys or other inquiries such as focus groups and personal interviews are often employed to gauge participants' knowledge, memory, sentiment, evaluation, and so forth. With the aid of physiological measures in the media context (Lang et al., 2009)—such as eye-tracking (Vraga et al., 2016), skin conductance (Petersen et al., 2015; Smith et

al., 2011), heartrate (Smith et al., 2011), facial expression (Mendes & Koslov, 2013) and EMG (electromyography)—researchers have utilized one or a combination of the aforementioned physiological measures to ascertain respondents' attitude, action, and reaction. The study's rationale of resorting to the physiological route for gauging human emotions has derived from Damasio's (1999, 2003) and Ekman's (2003) work, which illustrate that facial expression and bodily changes such as those in heart rate and muscular contraction are indicative of psychological states. Some findings yielded from physiological measures appear to correspond well with the counterparts gathered from respondents' self-reports. Bradley et al. (2007), for example, found that EMG activities in general correspond to the positive, negative, and neutral emotions unveiled in self-reports.

Yet, other studies (Ensari et al., 2016; Karl, 2019; Mendes et al., 2002; Petersen et al., 2015) indicate that there exists a noticeable gap between the two kinds of measurements on human responses to messages. Measuring participants' skin conductance to infer the level of arousal after political ad exposure, Karl (2019), for example, found that the separate measures of arousal and three discrete emotions (anger, fear, and enthusiasm) do not correspond well. Only a few (e.g., Coronel & Sweitzer, 2018) have included both routes of measurement in the same studies, let alone using different physiological measures for the same variable. Nevertheless, the discrepancy between physiological and self-report measures may derive from a number of human tendencies in self-reflection, "overcorrection" (Mendes & Koslov, 2013), "truth bias" (Lloyd et al., 2017), among others. The elaborative feature of self-report and the reflexive nature of physiological measures of attention and emotion (Bradley et al., 2007) may not converge precisely in the same domain.

Given the conflicting findings collated so far, it is therefore important to examine people's cognitive and affective outcomes after their exposure to identical political content by employing both routes of measures. This study aims to examine whether and to what extent the equivalent measures gathered from both self-report and physiological means are positively related to each other. The subsequent two hypotheses are formed only to serve

as a guide for the study's empirical inquiry rather than reflecting the consensus of the existing scholarship.

H5: Participants' self-reports on their issue involvement are positively related to their time spent on the screen where the political advertisement is shown.

H6: Participants' self-reported emotions are positively related to their corresponding physiological measures that reflect emotions during their exposure to the political advertisement.

Method

This study employed an experiment with 3 (party) × 2 (issue) mixed factorial design in which participants were randomly assigned to one of three party conditions. Party sponsorship – the between-subjects factor – consisted of 1) ad sponsored by the Democratic candidate in the 2016 election 2) ad sponsored by the Republican candidate, and 3) ad sponsored by a non-partisan organization. Issue—the within-subjects factor—consisted of advertisements that focused on either immigration or the economy, two issues of high concern in the 2016 election cycle.

Participants

Ninety-seven adults participated in the study approved by the Institutional Review Board at a large private university in the northeast United States. Faculty and staff, who must be eligible voters, from various units were recruited via electronic invitations distributed by their administrators and flyers posted on public bulletin boards. Participants ranged in age from 18 to 73 years (M = 32.68, SD = 15.10) and included 32.0% males, 67.0% females, and 1.0% indicating other for gender identity. In terms of ethnicity, the sample consisted of 84.5% Caucasian/White, 8.2% Asian/Asian American, 5.2% African American/Black, 4.1% Hispanic/Latino American, 1.0% Native American, and 1.0%

indicating other. Regarding party affiliation, 72.2% were Democrat, 19.6% were Independent, and 8.2% were Republican, with an average political inclination score of 2.75 (*SD* = 1.29) on a scale anchored by 1 (*extremely liberal*) and 7 (*extremely conservative*). It is worth noting that the study's random assignment of participants (regarding their party affiliation) into different treatment groups was effective, despite the lower number of Republicans in the study sample. Approximately 84% of the sample reported having at least a four-year college degree with 42.3% holding a graduate degree.

Procedure

Data were collected over a 3-week period prior to the 2016 Election Day. First, participants completed a 10-minute questionnaire via the Qualtrics platform that assessed general demographic characteristics, eligibility, and status to vote in the U.S., political attitudes and interests, and views on specific social issues. The inclusion criterion required that participants be registered voters for the upcoming election, which was intended to exclude those who may not find the U.S. election to be relatable, reducing validity.

Eligible participants then took part in a 15-minute lab session in which they were asked to view a set of political advertisements during which their facial expressions and eye tracking responses were measured and recorded. The experimental room resembled a typical living area with a sofa, coffee table, and a workspace where participants can comfortably sit in front of the laptop. The researcher assisted the participant with calibrating their eyes to the screen using a remote eye tracking sensor connected to the laptop. Following the eye calibration process, the participant was given instructions to view two political advertisements (that talk about different issues) and to respond to questions about their feelings and perceptions after viewing each of the advertisements via the Qualtrics platform. Upon completing the study, participants were debriefed, given a monetary compensation, and asked to not disclose their experiences in the study.

Apparatus

During the experimental sessions, participants used a 15" laptop with a built-in webcam installed with iMotions biometric research software that collects participants' facial expressions using AFFDEX facial expression analysis and action coding. Specifically, the package detects real-time emotions using automated computer algorithms that record facial expressions via a webcam. The iMotions platform also records eye positions and movements using the Tobii X2-30 remote eye tracking sensor attached to the base of the laptop screen. Both participants' facial expressions and visual attention on the screen were measured using the aforementioned hardware and software as they viewed their assigned set of political advertisements.

Stimuli

To elevate external validity and ensure consistency in video format, emotional tones, candidate presence, and duration, six real political commercials that run about 30 seconds and featured either immigration or the economy were selected as the stimuli for the participants to view. The process to decide on the stimuli is as follows. Real political advertisements during 2016 election cycle were reviewed by two graduate research assistants from a large sample of advertisements available on YouTube and broadcast in the weeks leading up to the election on the basis of *sponsorship* (i.e., sponsored by either the Democratic candidate, Hillary Clinton, by the Republican candidate, Donald Trump, or by a non-partisan organization) and *issue.* A pilot study of the issues featured in the campaign cycle found that climate change, national security, gun control, economy, racial equity, immigration, healthcare, education, foreign policy, and veterans were prominent. To ensure consistency in video format, emotional tone, candidate presence, and duration (approximately 30 seconds in length), six political commercials that feature either immigration or the economy and meet the four aforementioned goals were selected as stimuli in the study. The two issues were chosen because of their prominence in the 2016 election and availability across the three sponsorships. These video stimuli vary across the three sponsors and focus on either issue (immigration or the economy) in the

advertisement's narrative. In the control, non-partisan organization-sponsored advertisements, no criticism or praise on either candidate was conveyed, no electoral action was called for, only either focused issue was narrated to alert voters' attention.

A pretest was performed to test the perception toward either political candidate after viewing each of the six advertisements. Recruited from a large introductory communication course at the university, 436 undergraduate students reported their impressions of how each of the three advertisements on either issue presented the Democratic candidate and the Republican candidate. These advertisements were counterbalanced to prevent order effects. Findings of the first issue advertisements sponsored by three entities confirmed that participants formed different perceptions toward Clinton ($F = 399.97$, $p < .001$) and Trump ($F = 63.91$, $p < .001$). For perceptions toward Clinton, the mean scores for Clinton-, Trump-, and non-partisan-sponsored advertisements were ($M = 6.912$, $SD = 1.33$; $M = 3.54$, $SD = 1.11$; $M = 4.15$, $SD = .98$); for perceptions toward Trump, the mean scores were ($M = 2.76$, $SD = 1.25$; $M = 5.86$, $SD = 1.56$; $M = 3.84$, $SD = .97$), respectively.

Measures

Party and Issue Congruence

Participants reported in the pre-test about their party affiliation, political attitude and ideology, and the degree to which they perceived the issues of immigration and the economy to be of concern to them. The specific wording of these questions is in the Appendix. *Party congruence* was represented by a dummy variable, in which 1 represented the congruent situation where participants viewed the commercial on either issue sponsored by the same party (1) vs. by the other party or non-partisan organization (0).

Whether participants' exposure to a congruent issue was also denoted by a dummy variable—with 1 as being exposed to a congruent issue and 0 as being exposed to an

incongruent issue. The process of determining whether either issue was congruent to any participant involved two steps. First, participants reported the degree to which they perceived the issues of immigration and the economy to be important, sought out these issues in the news, were involved in these issues, and talked with others about these issues. Issue involvement was measured using these four individual items that ranged from 1 (*not at all*) to 7 (*a lot*) (Immigration: $\alpha = .75$, $M = 3.94$, $SD = 1.30$; Economy: $\alpha = .75$, $M = 4.72$, $SD = 1.19$). The *issue involvement* index of each participant was used to compare with their corresponding physiological attention in the hypothesis testing.

The second part of the determination process of issue congruence involved a median split of the range of issue involvements for all participants. The rationale of determining issue congruence was based on Schmitt and Thomassen's (1999) argument that representation of constituents in any given community embodies the relative – rather than absolute – issue congruence level in politics. Specifically, those scoring less than 4.38 were categorized as having low issue involvement and those scoring higher than 4.38 were categorized as having high issue involvement. The exposed issue that was considered a high-involvement one by the participant was considered a congruent issue; likewise, the exposed issue that was considered low-involvement by the participant was considered an incongruent one.

Attention

Participants' visual attention to the computer screen where real political advertisements were shown was recorded using the Tobii X2-30 remote eye tracking sensor and the iMotions screen-based eye tracking module. The system allows the researcher to collect 30 data points for each of the tracked eyes. As the political advertisements were viewed in full-screen mode and each of the advertisements varies in length, the percentage of time participants had their eyes fixated on the screen during the entire course of ad serves as the measure of time spent on the screen ($M = 47.65$, $SD = 20.09$).

Emotion

Participants' facial expressions were captured using the AFFDEX facial expression analysis and action coding software through the iMotions biometric research platform. Through automatic coding of facial landmarks, such as brows, eyes, and lips, AFFDEX is able to generate data representing 9 discrete emotions of the recorded face—anger, confusion, contempt, disgust, fear, happiness, sadness, frustration, and surprise (iMotions, 2016). These emotions were identified via the participant's facial movements and the average time for each expressed emotion represented the respective emotion participants experienced while watching the political advertisements. In addition to these physiological measures, a post-test questionnaire following each advertisement viewing included an assessment of 9 discrete emotions participants felt—angry, afraid, fearful, disgusted, unsafe, sad, hopeful, proud, and happy. The first six represented negatively valenced emotions while the rest represented positively valenced emotions.

The data analysis of the study consists of three parts. The first was to examine the effectiveness of the experimental manipulation using a different sample, which resulted in statistically significant findings. The second part of the analysis inspected the main effects of the manipulated conditions—3 ad sponsorships and 2 distinct issues—by ANOVA and MANOVA. Subsequently, regression tests that examined the influence of party congruence and issue congruence on attention and emotion while controlling for age, political ideology (spectrum of liberal to conservative), attitude toward politics (spectrum of positive to negative) were conducted. The last part of the statistical analyses provided the key evidence for hypotheses testing.

Results

Datasets consisting of the self-reports and physiological responses from the experimental sessions were collated and aligned; the combined dataset was inspected and cleaned for statistical analysis. The researchers first separated the measures corresponding

to each of the two advertisement exposures per participant and treated each set of responses as a unit of analysis (n = 194). The initial analysis using ANOVA showed that party sponsorship of advertisement was a significant factor in predicting participants' screen time (F = 4.80, df = 2, p < .01), whereas issue was not (F =.36, df = 1, p =.55). The MANOVA test shows that neither party sponsorship (*Wilks' Lambda* =.89, df = 18, p =.223) nor issue (*Wilks' Lambda* =.99, df = 184, p =.98) differentiated 9 physiologically measured discrete emotions. Results generated from OLS regression analyses were reported next to validate each of the hypothesized relationships. Given the small sample size and its less ideal level of representativeness, regression with robust standard errors was also conducted to examine each model's heteroskedasticity and parameter estimates. Based on the White Test results, only the model that predicts screen time by age, political ideology, political attitude, and issue involvement (reported in Table 3) -- did not pass heteroskedasticity test (chi-square = 19.049, df = 13, p = .122). Thus, the result presented in Table 3 should be interpreted with caution.

The first hypothesis was intended to inspect the relationship between participants' party identity with the ad sponsor (party congruence) and the time they spent on the screen where the ad was shown. Based on the regression result (Table 1) the predictor was positive and statistically significant (B = .240, p < .01), which supports H1. Party congruence with the ad sponsor and demonstrated emotion in terms of facial expression were also evaluated to see if they were related (H2). The association between participants' party congruence with the ad and their negative emotion was negative and statistically significant (B = -.192, p < .01); but the association between party congruence and positive emotion was weak and statistically nonsignificant (B = -.039, *n.s.*) (see Table 2). Therefore, H2 is partially supported.

Table 1. Predicting time spent on screen with partisan and issue congruence with ad

	Beta	*t*	*sig*
Birth year	.175	2.255	.025
Political ideology *(conservative)*	-.018	-.226	.822

Attitude toward politics *(negative)*	-.029	-.371	.711
Partisan congruence *(between viewer and ad)*	.204	2.703	.008
Issue congruence *(between viewer and ad)*	.051	.698	.486

R^2 =.071 F(5, 183) = 1.665 p = .019

Issue congruence between participants and the ad was hypothesized to be associated with the time they spent on the screen (H3) and with their emotions unveiled via facial expressions (H4). As regression result (see Table 1) indicated (B = .051, *n.s.*), issue congruence was not significantly related to attention to political ad – thus, H3 is rejected. Issue congruence was also examined in its relationship with participants' emotions (H4). Interestingly, as Table 2 shows, it was negatively associated with both positive (B = -.174, p < .05) and negative emotions (B = -.053, *n.s.*), although only the former association was statistically significant. Of the 9 discrete emotions that were included in the facial coding, three demonstrated significantly negative relationships with participants' issue congruence – joy (r = -.17, p = .02), fear (r = -.16, p = .03), and disgust (r = -.16 p = .03). Based on the above results, H4 was partially supported.

Table 2. Predicting positive and negative emotion by partisan and issue congruence with ad

	Positive emotion *Beta*	Negative emotion *Beta*
Birth year	-.023	-.287***
Political ideology *(conservative)*	-.047	-.088
Attitude toward politics *(negative)*	-.177*	-.033
Partisan congruence *(between viewer and ad)*	-.039	-.192**
Issue congruence *(between viewer and ad)*	-.174*	-.053
	R^2 = .067 F(5, 188) = 2.681*	R^2 = .128 F(5, 188) = 5.508***

*p <.05 **p<.01 ***p < .001

H5 examined whether self-reported involvement in either issue (the economy and immigration) was associated with the time participants actually spent watching the screen that showed either issue-based political commercial. The association between participants' self-reported involvement of an issue and their spent screen time on that issue-centered ad (see Table 3) was weak and statistically insignificant (B = .064, *n.s.*). Therefore, H5 is rejected. Interestingly, based on the regression results (shown in Tables 1 and 3), age is reversely related to attention to political advertisements.

Table 3. Predicting time spent on screen by self-reported issue involvement

	Beta	*t*	*sig*	*sig**
Birth year	.178	2.262	.025	.042
Political ideology *(conservative)*	-.091	-1.196	.233	.181
Attitude toward politics *(negative)*	-.030	-.377	.706	.706
Self-reported issue involvement *(high)*	.064	.837	.403	.423

R^2 =.035 $F(4, 184) = 1.665$ $p = .160$

**p* values generated from regression with robust standard errors

The last hypothesis aimed to verify if any correspondence between self-reported and facially expressed emotions of participants existed. In the post-test, participants were asked to report their emotions toward a specific candidate in the commercial they saw; additionally, automatically coded facial expressions of theirs were recorded through iMotions. Therefore, to test the correspondence between the two sets of measures, only the commercials with either of the candidates appearing in them were used in the statistical analysis. Overall, as Table 4 shows, the five parallel discrete emotions (anger, fear, disgust, sadness, joy/happiness) measured via the two means did not appear to correlate well. Their correlation coefficients hovered below .20 and failed to meet the 5% significance threshold. Moreover, some of the directions of their associations did not make immediate sense.

When the ads that featured Clinton were examined exclusively, the negative emotion of the participants coded by AFFDEX was modestly related to three self-reported counterparts: afraid (r = .23, p < .10), fearful (r = .25, p < .05), and sad (r = .23, p < .10). Two facially expressed emotions, fear, and disgust, were also significantly related to the three positive emotions participants self-reported, which was counterintuitive. The negative emotion physiologically expressed by participants viewing the Trump ads was positively related to their reporting of being afraid (r = .30, p < .05) and sad (r = .32, p < .01) and negatively related to being hopeful (r = -.25, p < .05), proud (r = -.23, p < .10), and happy (r = -.25, p < .05). Of the 9 discrete emotions coded via facial expression, participants' contempt consistently corresponded well with self-reported emotions (see Table 4). It was positively related to angry (r = .31, p < .05), afraid (r = .24, p < .10), fearful (r = .25, p < .05), and disgusted (r = .24, p < .05) and negatively associated with hopeful (r = -.31, p < .01), proud (r = -.36, p < .01), and happy (r = -.34, p < .01). Based on the inconsistent and sporadic results, H6 was cautiously rejected. It was apparent that the detected emotions via facial expression did not reflect well the states of emotions participants reported.

Table 4. Correlation between self-reported and physiologically coded emotions

	Self-reported emotion toward Trump (n = 68)								
Physiologically coded emotion	angry	afraid	fearful	disgusted	unsafe	sad	hopeful	proud	happy
Joy	.113	.080	.053	.132	-.117	.109	-.133	-.184	-.148
Anger	-.192	-.074	-.059	.020	.002	.004	-.112	-.138	-.112
Surprise	-.067	-.033	-.155	-.053	-.235†	.042	-.016	.012	-.037
Fear	-.031	.032	-.122	.014	-.153	.187	-.039	.001	-.023
Contempt	.313**	.238†	.248*	.244*	.036	.269*	-.314**	-.359**	-.335**
Sadness	-.013	.091	.231	-.053	.128	.256*	-.064	.000	-.084

Disgust	-.159	-.088	.034	-.023	-.158	-.054	.030	.000	.049
Confusion	-.181	-.212†	-.035	-.102	.229†	-.121	-.039	-.040	-.053
Frustration	-.064	-.035	.051	.078	.146	.063	-.179	-.224†	-.185
Positive	.113	.080	.053	.132	-.117	.109	-.133	-.184	-.148
Negative	.076	.303*	.151	.196	.046	.319**	-.250*	-.227†	-.245*

	Self-reported emotion toward Clinton (n = 66)								
Physiologically coded emotion	angry	afraid	fearful	disgusted	unsafe	sad	hopeful	proud	happy
Joy	-.059	.001	-.052	-.007	-.017	-.061	.100	.166	.094
Anger	-.175	-.128	-.050	-.203	.015	-.086	.150	.056	.196
Surprise	-.072	-.009	-.025	-.011	-.092	-.021	.052	.112	.196
Fear	-.163	-.042	-.024	-.134	-.082	-.098	.256*	.356**	.321**
Contempt	-.165	-.102	-.095	-.146	-.048	-.151	.132	.087	.094
Sadness	.185	.155	.169	.159	.010	.121	-.063	.046	.057
Disgust	-.125	-.138	-.148	-.108	.093	-.179	.293*	.310*	.431**
Confusion	-.126	-.118	-.017	-.207†	.089	-.070	.126	.017	.127
Frustration	-.151	-.117	-.033	-.194	.011	-.077	.087	-.001	.062
Positive	-.059	.001	-.052	-.007	-.017	-.061	.100	.166	.094
Negative	.140	.234†	.254*	.101	-.080	.227†	.049	.057	.106

† $p < .10$ *$p < .05$ ** $p < .01$

Discussion and Conclusion

This study investigates voters' selective exposure to political advertisements via physiological as well as self-reported measures. Results show that partisan congruence with advertisement's sponsor predicts voters' attention to the message and decreases

negative emotions in the wake of viewing the political commercial. Issue congruence, however, does not result in an increase in voter's attention to issue-centered messages. Interestingly, it is negatively associated with positive emotion and sporadically linked with some discrete emotions (e.g., joy, fear, and disgust). Overall, the study generates more confident physiological evidence to support the impact of partisan selective exposure than that of issue-based selective exposure. The influence of partisan selective exposure on voters' post-viewing emotions appears to be negativity-averse, i.e., people simply want to avoid being exposed to the opposing camp's messages. Yet voters' issue-based selective exposure appears to work less well in generating positive emotions than in abating negative emotions for them; in other words, exposing to concerning issues is not a positive experience. Overall, political advertisement viewing (especially in the 2016 election context) does not result in positive emotion—even though the impact of selective exposure on viewers' discrete emotions can vary across specific candidates. The single stimulus/measurement for each condition in this study could be the culprit for the inconsistent findings. Future studies should consider incorporating more than one instantiation in each treatment and more comprehensive issues in the stimuli to yield more reliable results.

The study result has ample implication to ponder. For one thing, it may explain why current political campaigns tend to concentrate on mobilizing the party base and emphasize on getting out the votes instead of providing sensible solutions for critical issues that face the nation and the world. This is because even those hot-button issues partisan voters claim to hold dear may not necessarily resonate well with the voters in the same political camp, much less moving and propelling others to act on them. Given the excessive partisan zeitgeist, conscientious campaign practitioners may need to be more creative and tailor electoral messages that can be processed across the aisle—so as to preserve the expected function of democracy. Moreover, political communication researchers may be better off unpacking the critical components included in broadly defined partisanship rather than gauging the influence of individual public issues.

The present study also verified whether and to what extent self-reported and physiologically based measures of attention and emotional expressions correspond. The two distinct measures of cognition and affect—self-reports and physiological assessments—do not necessarily and consistently match with each other. This inchoate finding is conceptually and methodologically intriguing and definitely merits future investigation on the underlying factors or conditional factors that might have triggered the inconsistency and irregularity. The findings of this study raise concerns for solely relying on self-reported data in light of their discrepancies with the corresponding expressed emotions that one may argue occur at a subconscious level, potentially making triangulating measures a more effective and comprehensive approach when researchers aim to capture more holistic or nuanced audience responses.

The findings also show that at the attention level, the issues that concern participants more do not lead to a longer time they actually spend watching the ads that discuss them. With regards to emotion, the overall correspondence between the self-reported emotions and facially manifested counterparts is merely modestly positive. The comparisons between identical discrete emotions—such as anger, fear, disgust, and joy—yielded from both means of measurement do not render a coherent, parallel result. It is premature to conclude which of the two methods is superior. But these findings warrant further and more comprehensive inquiries on whether the two routes of uncovering humans' cognitive and affective states are equally effective and/or whether one means is more valid than the other.

This study shines light on the inconsistent congruence between self-reported and physiological measures. On the one hand, it is still unclear whether the two methods are in effect measuring identical objects. There could be a number of potential dynamics for future researchers to consider. For one thing, people's self-reported interests or involvement in any issue can be mitigated by confounding factors such as perceived social expectation, personal relevance, or test sensitization; likewise, their facial expressions made during political commercial viewing can be a result of their existing, habitual reaction

toward political ads in general, that particular election or candidate, or indeed triggered by the discussed issue. Given these, it is too early to jump to the conclusion that these two methods do not match.

On the other hand, physiological measures, perhaps, are supposed to locate and unveil different objects. Responses of participants are result of *consciously recognized attitudes* and/or *behaviors* while automatic facial coding captures real-time, spontaneous physiological responses that are not necessarily conscious to participants. Some voters may believe that immigration is an important issue the country is facing, but dislike the commercial's take, thus reducing their time on the screen. In the emotion context, participants' prior experience with the election campaign and appraisal of the candidates featured in the commercials, focused issues, and other images in the ads, or even the medium where campaign messages are delivered may result in unique emotional consequences. Therefore, it is too early to throw the baby out along with the bathwater – these two routes of measurement may need to be examined and fine-tuned further to sort out their overlap and/or peculiarity. For advertising or campaign practitioners, utilizing multiple measurements to evaluate persuasion is advisable.

One of the shortcomings of this study—given the participants recruited in only one geographic region and the specific viewing experience—pertains to external validity. Future research should increase experiment's generalizability (Findley et al., 2021; Hartman, 2021) by replicating it with a larger and more diverse sample of eligible voters – in terms of political inclinations, stances on examined issues, and other potentially related factors. Due to the researcher's study base (and limited budget), eligible voters who lean on the conservative side were extremely hard to recruit; future studies may consider multiple locales to recruit participants who lean politically in both or more directions (e.g., red, blue, and purple). In addition, as in other lab experiments, this study cannot completely rule out the interference of the particular viewing experience (or distraction, and environment) on the research outcome. Despite the researcher's efforts to standardize the viewing experience for all (e.g., full-screen commercial viewing and all internet links being

disabled) and to emulate a typical living room where sessions took place, this study could not completely simulate the naturally occurring viewing of political commercials. Other antecedents prior to content exposure such as emotional states of the participants (Song, 2017) also were not measured and taken into consideration. It would be conceptually fruitful to include emotional measurements before and after the experimental sessions.

Lastly, it is worth mentioning the difficulty to produce effective political stimuli that embody both exclusivity of the manipulated variables in the content as well as external validity to the specific political context. While the ecological validity of the study by using real advertisements broadcast during the campaign is upheld, incorporating a fictional political scenario with original content or other content manipulation technologies could help to reduce confounds that threaten internal validity for future experimental designs.

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Appendix

Questions in the pre-test

Party Identification
Generally speaking, which political party do you identify with?
(Democrat; Republican; Independent; don't know)

Political ideology
Generally speaking, where would you place yourself on a 7-point scale of political inclination?
(Liberal – conservative)

Attitude toward politics
Please indicate how much you agree with the following statements (7 Likert-scale).
Learning about elections takes too much time.
Voting is a hassle.
Staying informed about politics and government is too much trouble.
Political campaigns are disgusting.
Politics are dirty.

Issue involvement
Below are two issues the country is facing: Immigration, the economy.
Please rate their importance (7 Likert-scale)
How much attention do you pay to news stories about (7 Likert-scale)
How much are you directly involved with the issue of (7 Likert-scale)
How often do you talk/discuss with others (online or offline) about (7 Likert-scale)